ON THE LIFE OF HUMAN BEINGS AND OF THE EARTH

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1. The Nature of Color

IN order, gentlemen that the Last question may be thoroughly answered. I will, as far as possible, say something about colors. One cannot really understand colors if one does not understand the human eye, for man perceives colors entirely through the eye.

Picture to yourselves, for instance, a blind person. A blind person feels differently in a room that is lighted and in a room that is dark. Though it is so weak a matter that he does not perceive it, yet it has a great significance for him. Even a blind person could not live perpetually in a cellar, he would need the light. And there is a difference if one brings a blind man into a bright room with yellow windows, or into a dark room, or into a fairly light room which has blue windows. That acts quite differently on his life. Yellow color and blue color influence life quite differently. But these are things which one learns to understand only when one has grasped how the eye is affected by color.

Now from what I have hitherto put before you, you will perhaps have realized that two things are most important in man. The first is the blood, for if man were not to have blood he would have to die at once. He would not be able to renew his life every moment and life must be every moment renewed. So if you think away the blood from the body, man is a dead object.

Now think away the nerves too: man would no doubt look just the same, but he would have no consciousness; he could form no ideas, could will nothing, would not be able to move.

We must therefore say to ourselves: For man to be a conscious human being he needs nerves. For man to be able to live at all he needs blood. Thus blood is the organ of life, the nerves are the organ of consciousness.

But every organ has nerves and has blood. The human eye is in fact really like a complete human being and has nerves and blood. Imagine that here [a drawing was made] the eye protrudes, and in the eye little blood-arteries, many blood-arteries spread out. And many nerves too spread out. You see, what you have in the hand, that is, nerves and blood, you have also in the head.

Now think: the external world which is illumined works upon the eye. By day at any rate the world in which you go about is illumined, but it is difficult to form an idea of this wholly-lighted outer world. You get a true idea when you imagine the half-lighted world in the morning and evening, when you see the red of dawn and evening. Dawn and the sunset glow are particularly instructive.

For what is actually there in the glow of dawn and evening? Picture to yourselves the sunrise. The sun comes up, but it cannot shine on you direct as yet. The sun comes when the earth is like this — I am now drawing the apparent path, but that does not matter (in reality the earth moves and the sun stands still, but how we see this makes no difference). The sun sends its rays here [drawing] and then here. So if first you stand there, you do not see the sun at dawn, you see the litÖ¾up clouds. These are the clouds and the light falls actually on them. What is that actually? This is very instructive. Because the sun has not quite risen, it is still dark around you and there in the distance are the clouds lit up by the sun. Can one understand that?

If you stand there you are seeing the illumined clouds through the darkness that is around you. You see light through darkness. So that we can say it is the same thing at dawn and sunset — one sees light through darkness. And light seen through darkness — as you can see in the morning and evening glow — looks red. Light seen through darkness looks red.

Now I will say something different. Imagine that dawn has gone by and it is daytime. You see freely up into the air, as it is today. What do you see? You see the so-called blue sky. To be sure, it is not there, but you see it all the same. That certainly does not continue into all infinity, but you see the blue sky as if it were surrounding the earth like a blue shell.

Why is that? Now you have only to think of how it is out there in distant universal space. It is in fact dark. For universal space is dark. The sun shines only on the earth and because there is air round the earth the sunbeams are caught and make it light here, especially when they shine through watery air. But out there in universal space it is absolutely black darkness. So that if one stands here by day one looks into darkness, and one should actually see darkness. But one does not see it black, but blue, because all round there is light from the sun. The air and the moisture in the air are illumined.

So you see quite clearly darkness through the light. You look through the light, through the illumined air into darkness. And therefore we can say: Darkness through light is blue.

There you have the two principles of the color-theory which you can simply get from observation of the surroundings. If you thoroughly understand the red of dawn and evening glow you say to yourself: Light seen through darkness or obscurity is red. When by day you look out into the black heavens, you say to yourself: Darkness or obscurity seen through light — since it is light around you — is blue.

You see, men have always had this quite natural view until they became “clever.” This perception of light seen through darkness being red, and darkness through light being blue, was possessed by ancient peoples over in Asia when they still had the knowledge which I have lately described to you. The ancient Greeks still had this concept, and it lasted through the whole Middle Ages until the 14th. 15th, 16th, 17th centuries when people became clever. And as they became clever, they began not to look at nature but to think out all sorts of artificial sciences.

One of those who devised a particularly artificial science about color was the Englishman Newton. Out of cleverness — you know how I am now using the word, namely quite in earnest — out of special cleverness Newton said something like this: Let us look at the rainbow — for when one is clever one does not look at something happening naturally every day: dawn, sunset, one looks at the specially unusual and rare, something to be understood only when one has gone further. However. Newton said: Let us look at the rainbow. In the rainbow one sees seven colors, namely, red, orange, yellow, green, blue, indigo, and violet. One sees them next to each other in the rainbow:

Red
Orange
Yellow
Green
Blue
Indigo
Violet

When you look at a rainbow you can distinguish these seven colors quite plainly.

Now Newton made an artificial rainbow by darkening the room, covering the window with black paper, and in the paper he made a tiny hole. That gave him a very small streak of light.

Then he put in this streak of light something that one calls a prism. It is a glass that looks like this [drawing], a sort of three-cornered glass, and behind this he set up a screen. So he then had the window with the hole, this tiny beam of light, the prism and behind it the screen. Then the rainbow appeared with the red, orange, yellow, green, blue, indigo, violet colors. What did Newton then say?

Newton said to himself: The white light comes in; with the prism I get the seven colors of the rainbow. Therefore they are already contained in the white light and I only need to draw them out.

You see, that is a very simple explanation. One explains something by saying: It is already there and I draw it out.

In reality he ought to have said: Since I set up a prism — that is. a glass with a cornered surface, not a regular glass plate — when I look through it like this, there is light made red through darkness, and on the other side darkness made blue through light — the blue color appears. And in between lie in fact gradations. That is what he ought to have told himself.

But at that time the aim in the world was to explain everything by seeking to find everything already inside that from which one was really to explain it. That is the simplest method, is it not? If, for example, one is to describe how the human being arises, then one says: Oh well, he is already in the ovum of the mother, he only develops out of it. That is a fine explanation!

We don’t find things as easy as that, as you have seen. We have to take the whole universe to our aid, which first forms the egg in the mother. But natural science is concerned with throwing everything inside, which is the simplest possible way. Newton said that the sun already contained all the colors and we had only to draw them out.

But that is not it at all. If the sun is to produce red at dawn, it must first shine on the clouds and we must see the red through darkness; and if the sky is to appear blue, that is not at all through the sun. The sun does not shine into the heavens: it is all black there, dark, and we see the blue through the illumined air of the earth. We see darkness through light, and that is blue.

The point is to make a proper physics where it could then be seen how in the prism on the one side light is seen through darkness and on the other darkness through light. But that is too tiresome for people. They find it best to say that everything is within light and one only draws it out. Then one can say too that once there was a giant egg in the world, the whole world was inside, and we draw everything out of it.

That is what Newton did with the colors. But in reality one can always see the secret of the colors if one understands in the right way the morning and evening glow and the blue of the heavens.

Now we must consider further the whole matter in relation to our eye and to the whole of human life altogether. You see, you all know that there is a being which is especially excited through red — that is, where light works through darkness — and that is the bull. The bull is well known to be frightfully enraged by red. That you know.

And so man too has a little of the bull-nature. He is not of course directly excited through red, but if man lived continually in a red light, you would at once perceive that he gets a little stimulation from it. He gets a little bull-like. I have even known poets who could not write poetry if they were in their ordinary frame of mind, so then they always went to a room where they put a red lampshade over the light. They were then stimulated and were able to write poetry. The bull becomes savage: man by exposing himself to the red becomes poetic! The stimulation to poetry is only a matter of whether it comes from inside or from outside. This is one side of the case.

On the other hand you will also be aware that when people who understand such things want to be thoroughly meek and humble, they use blue, or black — deep black. That is so beautiful to see in Catholicism: when Advent comes and people are supposed to become humble, the Church is made blue; above all the vestments are blue. People get quietened, humble; they feel themselves inwardly connected with the subdued mood — especially if a man has previously exhausted his fury, like a bull, as for instance at Shrove Tuesday's carnival. Then one has the proper time of fasting afterwards, not only dark raiment, black raiment. Then men become tamed down after their violence is over. Only, where one has two carnivals, two carnival Sundays, one should let the time of fasting be twice as long! I do not know if that is done.

But you see from this that it has quite a different effect on man whether he sees light through dark that is red, or darkness through light, that is blue.

Now consider the eye. Within it you have nerves and blood. When the eye looks at red, let us say at the dawn or at something red, what does it experience? You see, when the eye looks at red then these quite fine little blood-arteries become permeated by the red light, and this light has the peculiarity of always destroying the blood a little. It therefore destroys the nerve at the same time, for the nerve can live only when it is permeated by blood. So that when the eye confronts red, when red comes into the eye, then the blood in the eye is always somewhat destroyed and the nerve with it.

When the bull is faced with red it simply feels: Good gracious — all the blood in my head is destroyed! I must defend myself! — Then it becomes savage because it will not let its blood be destroyed.

Well, but this is very good — not only in the bull, but in man and in other animals. For if we look at red and our blood becomes somewhat destroyed, then on the other hand our whole body works to bring oxygen into the eye so that the blood can be re-established.

Just think what a wonderful process takes place there. When light is seen through darkness — that is, red — then the blood is destroyed, oxygen is absorbed from the body and the eye vitalized through the oxygen. And now we know through the renewal of life in our eye: There is red outside. But in order that we may perceive this red, the blood and the nerve in the eye must be a little destroyed. We must send life, that is, oxygen, into the eye. And by our own vitalizing of the eye, by this waking up of the eye we notice: there is red outside.

Now you see, man’s health too actually depends on his perceiving rightly the reddened light, on his always being able to take in reddened light properly. For the oxygen which is drawn out of the body vitalizes then the whole body and man gets a healthy color in the face. He can really reanimate himself.

This refers not only to a person who is healthy and able to see, it applies as well to one whose eyes are not healthy and who does not see: When the light works through the bright color then he is vitalized in the head, and this vitalizing acts again on the whole body and gives him a healthy color. So when we live in the light and can take in the light properly we get a healthy color.

It is very important tor people not to be brought up in dark places where they can become lifeless and submissive. People should be brought up in light, bright places with yellowish-reddish light, where they also properly assimilate the oxygen in them through the light.

But you see from this that everything connected with the element of red is actually connected with the development of man’s blood. When we look at red the nerve is actually destroyed.

Now just think: We see darkness through light, that is, blue. Darkness does not destroy our blood, it leaves our blood unharmed. The nerve too is undestroyed since our blood is in order. The result is for man to feel himself thoroughly well inwardly. Since blood and nerve are not attacked by blue, man feels thoroughly well inside.

And there is really something subtly refined in creating submissive meekness. When, let us say, the priests there above at the altar are in their blue or their black vestments, and the people sit below and gaze at them, the blood-arteries and nerves in the eye are not destroyed and naturally the people feel very well. It is actually directed to the feeling of well-being of the people.

Do not imagine that that is not known! For they still have their ancient science. The more modern science has only arisen with the men of the Enlightenment, in such men as, for instance. Newton.

Thus we can say: Blue is what sends through man a feeling of well-being, when he says to himself (it is all unconscious, but he says it inwardly): There alone I can live — in the blue. There man feels inwardly himself; in red, on the other hand, he feels as if something were to penetrate into him. One can say that with blue the nerve remains undestroyed and the body sends the feeling of well-being into the eye and hence into the whole body.

That is the difference between the color blue and the color red. And yellow is only a gradation of red, and green is a gradation of blue. So that one can say: according to whether nerve or blood is active, the more sensitive is man to red or to blue.

Now you see, one can apply that to substances. If I want to look for a red for pointing, to produce a red color which contains the substances that stimulate man to develop oxygen inwardly, then I gradually arrive at the fact that to get red color for painting I must test the substances of the outer world to find how much carbon they contain. If I combine carbon in the right way with other substances, I discover the secret of making a red for my painting.

If I use plants for getting colors for paints then above all it is a matter of so organizing my processes, diminishing, consuming, and so on, that I obtain the carbon in the paint in the right way. If I have the carbon in it in the right way, then I get the bright, the reddish color.

If on the other hand I have substances which contain much oxygen — not carbon but oxygen — then I obtain the darker colors, such as blue. When I know the living element in the plant then I can really create my colors. Imagine that I take a sunflower: that is quite yellow, a bright color. Yellow is near to red, that is, light seen through darkness. If I now treat the sunflower in such a way as somehow to gel into my paint-color the right process that lies in the flower, then I have a good yellow. Even the outer light cannot have much against it, because the blossom of the sunflower has already taken from the sun the secret of creating yellow. If I therefore get the same process into my artist's color as there is in the blossom, then if I get it thick enough, I can use it normally as paint.

But let me take another plant, the chicory, for instance, the blue flower that grows on the wayside — it grows here too. If I have this blue plant and want to prepare a paint from the flower, I cannot do it, I get nothing from it. On the other hand, if I treat the root in the right way, there is a process in it which actually makes the blossom blue.

When the blossom is yellow then something goes on in the blossom itself which makes yellow; when the blossom is blue, however, the process lies in the root and it only presses upwards towards the flower. So if I want to produce a blue paint from the indigo-plant, where I get a darker blue, or from the chicory, this blue flower, I must use the root. I must treat it chemically till it yields me the blue color.

In this way, through real study, I can find out how to obtain paints from the plant. I cannot do so in Newton's way; he simply says that everything is in the sunlight and one has only to draw it out. (One can apply that at most to one’s purse; what I spend for a day I must have in the purse in the morning.) That is how the quite clever people picture it, like a sack in which everything is lying. That, however, is not the case.

We must know, for instance, how the yellow is in the sunflower or in the dandelion. We must know how the blue is in chicory. The processes which make the chicory or the indigo×[3] plant blue lie in the root, whereas the processes that make the sunflower or the dandelion yellow lie in the flower.

And so I must imitate chemically, in a chemistry become living, the flower-process of the plant and get the bright, light color. I must imitate the root process of the plant and there obtain the dark color.

You see, what I have related here is plain to the real human understanding; whereas as a matter of fact this business (in the rainbow) with the red, orange, yellow, green, blue, indigo, violet, is a rarity.

Now when Goethe lived the affair had got to the point where people generally believed in what Newton had taught, namely, the sun is the great sack in which lie the so-called seven colors. One need only tempt (hem out, then they come to light. Everyone believed that; it was taught and in fact is still taught today.

Goethe’s nature was not one to believe everything immediately. He wanted to convince himself a little about things that were taught everywhere. People generally say that they do not believe anything on authority. But when it comes to the point of crediting what is taught from the professorial chair, then people are today frightfully credulous, they believe everything that is taught. Goethe did not want to believe everything straightaway, so he borrowed from the university in Jena the apparatus, the prisms and so on which provide the proof. He thought: Now I will do exactly what the professors do in order to see how it actually is.

Well, Goethe did not get down to it immediately and had the apparatus rather a long time without doing anything. He just did something else. So the time became too long for the Hofrat Büttner who needed the apparatus and wanted to have it fetched back. Goethe said: Now I must do the thing quickly — and at least, as he was already packing up, looked through a prism. He said to himself: The rainbow must look beautiful on the white wall if I look through there; instead of white, red, yellow, green and so on must appear. He therefore peered through, anticipating with delight that he would now see the white wall in these beautiful colors, — but he saw nothing: white as before, simply white. Naturally he was extremely surprised and asked himself what was behind it. And his whole theory of color arose out of this.

Goethe said: One must now control the whole affair again. The ancients have said light seen through darkness = red, darkness through light = blue. If I gradate the red somewhat it becomes yellow. If I make the blue go up to red, then it becomes green on the one side and violet on the other. These are gradations. And he then worked out his color theory and in fact better than it existed in the Middle Ages.

Now today we have a physicist’s color-theory with the sack from which the seven colors come, which is taught everywhere. And we have a Goethean color-theory which understands the blue of the heavens rightly, understands rightly the morning and evening glow as I have been explaining to you.

But there is a certain difference between the Newtonian and the Goethean theory. For the most part other people do not notice it, for other people look on the one hand to the physicists: there the Newtonian theory of color is taught which stands in the books everywhere. One can very clearly picture to oneself what appears there in the rainbow as red, orange, yellow, green and so on. Well, but there is no prism there! However, one does not reflect further. The Newtonians certainly know, but they do not admit, that when one looks through the rainbow on the one side, then one sees darkness through the sun-illumined rainbow; sees on the other side the blue. But then one also sees in front the surface where one sees light through darkness, and on the other side the red. One must explain everything therefore by the simple principle: light through darkness is red; darkness through light is blue.

But as I have said, people on the one hand see everything as the logicians explain it to them: on the other hand they look at pictures where the colors are used. Well, they do not ask further about the red and the yellow and so on; they do not bring the two things together.

But the painter must bring them together: one who wants to paint must connect them. He must not merely know: There is a sack and the colors are within it — for he has not got the sack anywhere. He must obtain the right thing from the living plant, or living substances, so that he can mix his colors in the right way.

So this is the position today: painters really reflect (— there even are painters who reflect, who do not simply buy their colors): but those painters who reflect upon how they are to obtain these colors and how they should use them, they say: Yes, with the Goethean color-theory one can do something; that tells us something. With the Newtonian color-theory, the theory of the physicists, we painters can do nothing.

The public does not bring painting and the physicists' theory of color together, but the painter does! He therefore likes the Goethean color-theory. He says to himself: Goodness! We don’t bother about the physicists: they say something in their own field. They may do what they like; we keep to the Goethean color-theory. The painters look on themselves as artists and not as having to encroach on the teaching of the physicists. That is in fact uncomfortable, enmities arise, and so on.

But that is how things stand today between what is in the books about color and what is true. With Goethe it was simply the defense of truth which impelled him to oppose the Newtonians and the whole modern physics. And we cannot really understand nature without coming to Goethe’s color-theory.

Hence it is quite natural that in a Goetheanum Goethe’s theory of color should also be vindicated. But then if one does not remain in some religious or moral sphere but also intervenes in the smallest single part of Physics, then one has the physicists’ whole pack of hounds upon one.

So, you see, the defense of truth is extraordinarily difficult in modern times. But you should just know in what a complicated way the physicists explain the blue of the sky. Naturally, if I start from a false principle and want to explain the simple thing that the blackness of universal space appears blue through light, then I must make a frightfully complicated explanation of it. And then the red of dawn and sunset! These chapters mostly begin like this; the blue sky — one cannot actually explain that properly today, one could imagine this or that. — Yes, with all that the physicists have, their little hole which so much amused Goethe — the little hole through which they let the light come into the room, in order with the darkness to investigate the light — with all this they cannot explain the simplest facts. And so it comes to the point that color is no longer understood at all.

If one understands, however, that the destruction of the blood calls forth the vitalizing process — for when I have destroyed my blood then I call up all the oxygen in me and renew myself, bring about health — then one also understands the healthy rosy color in man.

If I have darkness round me or continual blueness, well, then I shall not continually reanimate myself, or else I should create too much life in me. And so on the one hand one can understand the healthy rosy countenance from the intake of’ oxygen, when one is thoroughly exposed to the light, and one can understand paleness from the perpetual intake of carbonic acid. Carbonic acid, the counterpart of oxygen, wants to go into my head. That makes me quite pale.

Today, for instance in Germany, the children are almost all pale. But one must understand that that comes from too much carbonic acid. And if man develops too much carbonic acid —

carbonic acid consists of a combination of carbon and oxygen — then he uses the carbon which he has in him too much for forming carbonic acid. Thus in such a pale child you have all the carbon in him continuously changed into carbonic acid. So he becomes pale. What must I do? I must administer something to him through which this eternal development of carbonic acid inside him is hindered, through which the carbon is held back. I can do that if I give him some carbonate of lime.

In this way the functions are again stimulated, as I have told you from quite a different standpoint, and man keeps the carbon that he needs, does not continually change it into carbonic acid. And since carbonic acid consists of carbon and oxygen, the oxygen comes up into the head and animates the head processes, the life processes. But when the oxygen is given up to the carbonic acid, the life processes are suppressed.

If I therefore bring a pale person into a region where he has a good deal of light, he becomes stimulated not to give up his carbon continually to carbonic acid, because the light sucks the oxygen up into the head. Then he will get a healthy color again. In the same way I can stimulate that through the carbonate of lime, inasmuch as I keep back the oxygen and the person has it at his disposal.

So everything must be interconnected. One must be able to understand health and illness from the theory of color. One can do that only from Goethe’s theory, for that rests simply on nature in a natural manner. It can never be done from Newton’s color-theory which is merely devised, does not rest on nature at all, and actually cannot explain the simplest phenomena, the red at dawn and sunset and the blue sky.

Now, gentlemen, may I still say something else to you. Think of the old pastoral peoples who drove out their flocks and herds and slept in the open air. During their sleep they were not exposed to the blue sky but to the dark sky. And up there upon it [drawing] are the unnumbered shining stars. Now picture the dark sky with these countless shining stars and there below the sleeping men. From the heavens there streams out a calming force, the inner feeling of well-being in sleep. The whole human being is permeated by the darkness, so that he becomes inwardly quiet. Sleep proceeds from the darkness, but nevertheless these stars shine down. And wherever a star-beam shines the human being becomes inwardly a little stirred up. An oxygen ray goes out from the body. Pure oxygen rays go to meet the rays from the stars and the man becomes entirely permeated inwardly by the oxygen rays: he becomes inwardly an oxygen reflection of the whole starry heavens.

Thus the ancient shepherd folk took into their quietened bodies the whole star heavens in pictures, pictures which the course of the oxygen engraved into them. Then they woke up and they had the dream of these pictures. From this they had their star knowledge, their wonderful knowledge of the stars.

Their dream was not merely that Aries, the Ram, had so-and-so-many stars, but they really saw the animal, the Ram, the Bull, and so on, and felt the whole starry heavens in themselves in pictures. That is what has remained to us from the ancient shepherd folk as a poetic wisdom which sometimes has extraordinarily much that can still be instructive today.

One can understand it when one knows that the human being lets an oxygen ray radiate to each beam of light from the stars, that he becomes wholly sky, an inner oxygen sky.

Man’s inner life is as we know an astral body, for during sleep he experiences the whole heavens. It would go badly with us if we were not descended from these ancient pastoral peoples. All men in fact are descended from ancient shepherd folk. We still have, purely through heredity, the knowledge of an inner star-heaven. We still unfold that, although not so well as the ancients. In sleep, when we lie in bed, we have still a sort of recollection of how once the shepherd of old lay in the fields and drew the oxygen into him. We are no longer shepherds and herdsmen but something is still given to us, we still receive something, only we cannot express it so beautifully as it has already become pale and dim. But the whole of mankind today is indeed interconnected, all belong to each other, — and if one would know what man still bears in him today, one must go back to ancient times. Everywhere, all men on earth have proceeded from this shepherd-stage and have actually inherited in their bodies what could descend from these pastoral peoples.

2. Color and the Human Races

Now, Gentlemen, I have not yet fully answered the last question about colors. We will take it a little further or complete it.

First of all, today we have to consider a most interesting question, namely, the human color itself. You know, of course, that over the face of the earth are people showing skins differing in color. The Europeans to whom we belong are called the “White Race.” Well, we know indeed that a man in Europe is not quite healthy when he is cheese-white. He is healthy when he shows his natural, fresh color, created by himself inwardly, through the white.

But now besides this European coloring we have four other principal colors of the skin. We will consider this a little today because one actually understands the whole of history and the whole social life, even modern social life, only if one can turn to the race-characteristics of humanity [see drawings at end of lecture]. Only then can one rightly understand the spiritual element if one first studies how the spirit works in man precisely through the skin-color.

I should now like to put the racial color before you in this way. Let us start from Europe where we ourselves are living. Here we have therefore — I can draw it for you only roughly — first Europe; bordering on Europe: Asia, England, Ireland;

here Japan, China; further India, India proper, Arabia; here we have Africa. Thus: Europe, Asia, Africa [see scheme at end].

Now we will sketch in the men as they are in the corresponding regions. We call ourselves in Europe the white race. If we go over to Asia we have the yellow race, principally in Asia. And when we go over to Africa there we have the black race. Those are the original races. All others living in these regions are the consequence of migration.

So if we ask: What races belong to these parts of the earth? — Then we must say: To Asia belongs the yellow race, the Mongolian; to Europe belongs the white race or the Caucasian race, and to Africa belongs the black or Negro race. The Negro race does not belong to Europe and it is naturally only mischievous that it now plays so great a role in Europe. These races are, as it were, at home in these three parts of the earth.

Now we will consider the color of these three races. I have already told you that color has to do with light. When one sees the black of universal space through the illumined universe, then it appears blue. When one sees light, illumination through the dark air, it appears reddish, as in the glow of morning and evening.

Let us just simply consider colors on ordinary objects. You first distinguish — let us say — black and white. These are the most striking colors, black and white. What is the position then with a black body? A black body assimilates in itself all the light that falls upon it and mirrors back none at all.

So if you have a black body, it takes the light that falls on it, absorbs everything into itself, and gives none back. It therefore appears black because it reflects no light.

When you have a white body it says: I do not need the light, I will only use what is in myself, I send all the light back. It is therefore white.

Thus a white body sends back all light and we see its surface light, white. A dark body absorbs all the light and also all the warmth and throws back no light, no warmth at all, and therefore appears black.

You can study that more closely if you consider the following. Suppose there is some object on the earth which takes up all light. In the first place it gives back a little light and so appears bright. But it allows itself time and takes up the most light possible. When it can take up no more and one brings it into the light, then it appears black.

Now, suppose there is a tree. It stands at first on the earth’s surface and takes up a certain amount of light. But it absorbs a good deal of both light and warmth. That goes on until the time when it falls below the earth. When, for a length of time,

— but that means thousands or millions of years — it has remained beneath the earth, what does it become? Black coal. It becomes black because it took up light and warmth into itself when it was a tree. It does not give that out unless we destroy it. If we burn it then it yields it, but if we only bring it into the air for a time it keeps it. It has taken up so much light and warmth that it gives nothing out — we must destroy it. That is the condition of coal.

Let us suppose that the object does not take up further light, it sends all back again, then something of such a nature will be white. That is the snow in winter. It reflects all light, it takes up no light and no warmth and thus becomes white. You see by this difference between coal and snow the relation that exists between objects on earth and universal space.

Let us apply that to man in universal space. Let us look just at the blacks in Africa. These blacks in Africa have the characteristic of absorbing from the universe all light and all warmth. They take it up. Now this light and this warmth in the universe cannot go through the whole body because a human being is always a human being even if he is a black one. It does not go through the whole body but stops short on the surface of the skin, and therefore the skin itself becomes black.

Thus a black man in Africa is one who absorbs the most possible warmth and light from the universe and assimilates it in himself. Through the fact that he does this the forces of the cosmos work over the whole man like this [see drawing]. He takes up light and warmth everywhere and uses it in himself. Now there must be something which helps him in this assimilation.

Well, you see, what helps him in particular is his posterior brain. In the Negro the posterior brain is specially developed. That goes through the spinal cord and can work over all the light and warmth that is in him.

Hence alt that is connected with the body and metabolism is strongly developed in the Negro. He has, as one says, a strong desire-life, instinctive life [see drawing]. And since he actually has the sun-like, light and warmth, on the surface of his skin, his whole metabolism proceeds as if there were a cooking by the sun itself in his interior. Hence comes his desire-life. There is really a continuous cooking going on within him, and what stokes the fire is the posterior brain.

Sometimes man’s organization throws off further byproducts. That is to be seen just in the Negro. The Negro not only has this cooking in his organism, it not only boils there, but he also has a frightfully crafty and observant eye. He peers craftily and very observantly. You can easily take this as a contradiction. But it is like this: If there in front is the nerve of the eye [see drawing], the nerves go just into the posterior brain; they cross there [see drawing]. The nerve goes into the posterior brain, and since that is specially developed in the Negro therefore he peeps out so craftily, is such a sly observer of the world. If one begins to understand the matter, it all becomes clear. But modern science does not make such studies as we do and so it knows nothing about these things.

Let us now pass over from the black to the yellow man. Yellow is already related to the red, and so light is reflected to some extent but much is absorbed. However, the yellow man throws back more light than a black. The black man is an egoist, he takes up all light and all warmth. The yellow Mongolian gives indeed some light back, but he absorbs a great deal. That makes him what he is [see drawing]. Thus he takes up much light but gives some back. He contents himself with less. This less amount of light cannot work in the whole metabolism, and so the metabolism must be referred to its own force. That works chiefly in the breathing and blood-circulation.

Thus in the yellow race — Japanese, Chinese — the light and warmth work principally in breathing and blood-circulation. If you have ever met a Japanese, you will have noticed how he pays attention to his breathing. When he talks to you he keeps himself under restraint so that his breathing may be in good order. He has a certain feeling of well-being in breathing.

This means that less is worked over in his interior, it is principally worked upon in the breast [see drawing]. This causes the yellow man to develop strongly, not the posterior brain, but the middle brain. It is there that his breath and blood-circulation are maintained. The yellow Asiatic lives rather less in the metabolism.

You can notice that too by his walking. He has a less energetic walk. He does not work so strongly with the limbs and the metabolism. The Negro is more to the fore in racing and outer movement that is governed by desires. The Asiatic, yellow man, develops more an inner dream life and therefore the whole Asiatic civilization has this dreamer-element.

Thus he is not only living more in himself; he absorbs something from the universe. And so it comes about that the Asians have such wonderful poems about the whole universe. The Negro has not got this quality. He takes everything into his metabolism and really he only digests the universe.

The Asiatic *breathes* it into himself, has it in his blood-circulation. And so he can also give it out from himself when awake. For speech is in fact only a metamorphosed breathing. Yes. Gentlemen, they are beautiful, wonderful poems. The Asians are altogether an inward people. They scorn the European today because they say: They are external people. We shall see why immediately. That then is the yellow race [see drawing] and it is connected with color in the way I have told you.

Now let us look at ourselves in Europe. We are a white race in regard to the universe, for we must give back all external light. We give back all light and. in fact, all warmth too. The warmth has to be very powerful if we want to take it into us. And when it is not there we are stunted, as we see by the Eskimos. There is the human being [see drawing] of such a nature that he throws back all light and warmth. He absorbs them only when they become powerful. He throws them back and develops only the light and warmth that arise in his inner being through his own inner activity.

Yes, neither breathing nor blood-circulation comes to help him, nor the creation of warmth; but he must himself work out light and warmth through his brain, that is, through his head. We actually throw back all external light and warmth. We ourselves must give the color to our blood. That then presses through the white and so we obtain the human color of the Europeans. It is from within.

And so indeed we are such a white body as assimilates everything within and throws back all light and warmth.

And whereas the Mongolian mainly needs the middle brain, we Europeans use the frontal brain, the anterior brain. Through this fact the following is shown. The man with the posterior brain has mainly the desire-life, life of instinct: the one here with the middle brain has the feeling life, situated in the breast; and we Europeans, we poor Europeans, have the thought-life that sits in the head. Thereby, as it were, we do not feel our inner man at all. For we feel the head only when it is ill. Otherwise we do not feel it.

But this makes us aware of the whole outer world and we easily become materialists. The Negro becomes no materialist, he remains man inwardly, only he develops the inner desire-life. Nor does the Asiatic become materialist, he remains at the feeling-life, he does not bother about external life as the European does. Of the latter he says: He is only an engineer, concerning himself only with outer life. — He is, in fact, since he must develop his frontal brain, assigned to the outer world, and everything is connected with that.

Thus we are the white race, inwardly the white is colored through our blood. Then there is the Mongolian, the yellow race; and then there is the black race. And we can understand that quite well when we start from the colors — then the whole thing is explained.

Now you only need to consider how that is. The Negroes live on a part of the earth where the sun oppresses them very much indeed, penetrates into them. So they give themselves up to it, absorb it fully into their bodies, become friendly with it, reject nothing.

With the Asians — more comes to them from the heat of the earth. They do not give so much back. They are no longer so friendly with the sun.

And with the Europeans — here the fact is that they would actually obtain nothing from the sun if they did not evolve their own human element. Europe has therefore always been the starting point for all that develops the human element in connection with the outside world.

Inventions have very seldom been made in Asia. They can be assimilated, but inventions themselves, by which the Asians can apply what is produced through practical experience with the outer world — these the Asians cannot make.

For instance, this is what once happened with a screw-steamer. Some Japanese had learnt about it through stealthily watching Europeans, and they also wanted to manage it alone. Previously the Europeans had always been in charge and directed things. Now the Japanese wanted to manage the steamer alone. The English remained behind on the shore. Suddenly the Japanese who were on board fell into evident despair, for the steamer continually revolved round itself.

They could not make out how to bring the proper forward motion to the revolving movement. The Europeans who knew how to do it naturally grinned tremendously on the shore. This independent thought which the European develops in familiarity with the environment is not possessed by the Asiatic peoples. The Japanese will therefore develop all European inventions, but they will not think out something by themselves.

As regards the human race, men all over the earth are actually dependent on one another. They must help each other. That is a consequence of their natural ability. That is connected, you see, with the whole of man’s development. Think for a moment of a black man; his desire-life is especially evolved, all that boils in the interior. This gives much ash, and the ash is deposited in the bones. He is therefore more developed in his bones than a man of the white race. The latter rather directs to the blood what he has inwardly and his bones are more finely developed. Thus the Negro has coarsely developed bones, the European has more finely developed bones. And the Asiatics, the yellow race, stand in between.

You can observe by the manner in which a Japanese stands and walks that in his bone-structure he stands between the European and the African. The Africans have these strong bones continuously in movement. The European has more the blood system. The Japanese has all that acts on the breathing and from the breath on the blood-circulation.

But now, Gentlemen, men on earth do not simply remain where they are. If one were to go back into ancient times, one would already find that the yellow race belonged to Asia, the white race to Europe and the black race to Africa. But it has also always happened that people have wandered out. And it can happen that either the yellow wander to the East or the blacks wander to the West. And that was once done. The yellow have always wandered eastwards. There they have come to those islands which lie between Asia and Australia [see scheme]. When the yellow wander over to the East they become brown. There arose the Malayans who became brown. Why?

Yes, why do they become brown? What does it mean to become brown? Well, when they are yellow they throw back a definite degree of light; the rest they absorb. When they become brown through the different way in which they now live in the sun — for they come from another part of the earth — then they throw back, reflect, less light. They take more light into themselves. So these brown Malayans are migrated Mongolians, but who now, since the sun works on them differently, accustom themselves to absorb more light and more warmth.

But consider how they have not the nature tor this. They have already accustomed themselves to have a bony structure which limits them to a definite degree of warmth. They have not the right nature for taking up so much warmth as they now take up as Malayans.

The result of this is that they begin to become unusable people, people who break to pieces in the body, whose body dies away. This is in fact the case with the Malayan population. They die of the sun. They die of the Fast. One can say that whereas the yellow, the Mongolians, are still men in full strength, the Malayans are already a dying race. They are dying out.

In ancient times the Negroes wandered over to the West — today circumstances are different, they can do it less — but they wandered westwards in ancient times; there had always been a ship passage, and there were still islands over the whole Atlantic Ocean, for earlier this was in fact a continent. Now when the blacks wandered west they could no longer absorb so much light and warmth as in their native Africa. Less light and warmth reaches them. What is the result? Their nature is organized to take up as much as possible of light and warmth and actually in that way to become black. Now they do not get as much light and warmth as they need in order to become black. So they become copper-red, become Indians. That comes from the fact that they are obliged to reflect something of light and warmth. That gleams a copper-red. Copper is itself a body which must reflect a little light and warmth.

They cannot hold out against this and so die in the West as Indians. They are again a race that is going under, they die from their own nature which gets too little light and warmth. They die from the earthly, and the earthly element of their nature is their desire-life. They can no longer develop that properly, whereas they still get strong bones. Since much ash goes into their bones these Indians can no longer hold out against it. Their bones become frightfully strong, but so strong that the whole man goes to pieces by reason of his bones.

You see, this is how things have developed, so that these five races have come about. One might say: Black, yellow, white in the center: as a side-branch of the black the copper-red, and as a side-branch of the yellow the brown: those are always the dying-out parts.

The whites are actually those who evolve the human element and so they are assigned to themselves. When they migrate they somewhat take on the characteristics of the other regions, yet they do not go to pieces as a race, but rather as individuals. But instead they do something else altogether.

You see, all that I have been describing to you are things that go on in man’s body, and the soul and spirit are more independent of it. And so soul and spirit can be most active in the European, since they make most claim on him. He can more easily bear going into different parts of the earth.

Hence it also once came about that starting from up above there [see scheme] a great migration of people went over as far as India. A stream of white people struck into a region where the population was yellow. Thus arose the Hindus, a mixture of Mongolian and Caucasian. Hence came the very beautiful Indian poetry, the most beautiful in existence. But again at the same time something of which one notes that it has already become inert, because the white element is not in its own territory.

And so one can say that the white man can go everywhere, today even lo America — and all the white inhabitants of America have come from Europe. The white element therefore comes into American regions, but something happens to man when he comes to America from the Europe for which he is naturally constituted. It means that some demand must be made on the posterior brain. As European in Europe he has made demands chiefly on his frontal brain. Now in America there flourish those people who were once actually decadent Negroes — that is to say, they do not flourish, they are going to pieces — the Red Indians. When one comes there a conflict always arises in the head between the anterior and the posterior brain.

It is found that if a family moves to America and settles there, then the descendants have the peculiarity of acquiring somewhat longer arms. The arms and legs grow rather more when the European settles in America — not in himself, of course, but in his descendants. That comes from the fact that things move over through the middle brain to the posterior brain when as European one comes to America.

But at the same time something very peculiar comes about in the American. Now the European lives entirely in his inner being, does he not — especially if he is a thinker. If he is no thinker, he barely reflects at all, but that produces a life which is not quite filled up. But as soon as the European settles in America he no longer is such a brooder. So the following arises: When you read a European book, things are always proved. One cannot get away from the proving. One reads through a whole book, reads through 400 pages, only proofs. Even if it is a novel there is always proving. For the most part, nothing is proved at the end on the 400th page.

The American does not do that. When you read an American book everything is put forward as a statement. There again it is a going-back, nourished by the instinct. The animal proves nothing; the lion does not prove that he will devour another animal, he will devour it. If the European wants to do anything, it must first be proved. Today that is the great difference between the European and the American. Europeans prove, Americans affirm.

But that is not to say that what they affirm cannot be just as true, it is even realized more through the whole man. The Americans have that in advance of the European. On the one hand they approach decadence — the American Indian is decadent — but when one begins to go to pieces one becomes clever. So the Europeans become clever when they go over: they disaccustom themselves from the proving. This wanting to prove is not exactly a quality to bring one forward. If one is to do something in the morning, one can begin with proving, and at night on going to sleep one can still not do it, because one still must prove. The American will not do that, because he has not been trained at all to prove. And so it comes that America will quite certainly go ahead of Germany in some things. One can make quite interesting observations. If one takes up a European book it proves somewhat as follows — let us say it is a book about the digestive system of the cockchafer — such books are indeed written. It begins by proving: “The animal species of the cockchafer contains also digestive organs, they only withdraw from ordinary observation, one must penetrate deeper into the whole organization of the cockchafer.” — Well, so it goes on. One has to prove everything.

The American begins with: “When one dismembers a cockchafer then one finds in it that and that” — he affirms as he observes.

And so you see in the case of the Europeans: they no longer develop their racial character on behalf of their whole organization. They develop rather the qualities of soul and spirit. For this reason they can penetrate into all other parts of the world. The process of becoming decadent is naturally a slow one.

The sun always sends more or less of warmth and light down to the earth. Now we have the Vernal Point in the Fishes, as I have told you. Previously it was in the Ram, Aries. After some time it will be in Aquarius: only then will the true American civilization come.

Before then civilization will go more and more over to America. One who will, can already see today how powerful the Americans are becoming and how Europe is getting increasingly impotent. And the reason why no kind of peace can now come to Europe is because Europe no longer actually understands its own land.

Now all civilization moves over to America; it will take a long time, but when the sun’s vernal point has entered the Sign of Aquarius then it will send down its rays to earth just in such a favorable way that the American culture and civilization will be especially powerful. That is already to be seen today.

It is very remarkable: In Europe over here what we call Anthroposophy can be developed. It must be developed out of the Spirit — that does not come at all out of racial characteristics. It must be developed out of the Spirit. And the men who are unwilling to approach the Spirit will plunge Europe into disaster.

The Americans do not yet need it, especially those who travel over there. For they can still maintain themselves on racial characteristics. And so over in America, curiously enough, arises something remarkable. Anyone who reads American books really attentively, who reads parliamentary speeches, one who takes a general interest in what goes on in America today, will say to himself: Good gracious! That is very remarkable. We in Europe develop Anthroposophy out of the Spirit. Over there they develop something that is a kind of wooden doll of Anthroposophy. Everything becomes materialistic.

But for one who is not a fanatic, there is something similar in American culture to what is anthroposophical science in Europe. Only everything there is wooden, it is not yet alive. We can make it alive in Europe out of the Spirit: those over there take it out of instinct.

You see, one cart notice that in all detail. The time will one day come when this American “wooden man” — which actually everyone is still — when he will begin to speak. Then he will have something to say very similar to European Anthroposophy.

One can say that we in Europe develop Anthroposophy in a spiritual way; the American develops it in a natural way. Therefore when I explain anthroposophical matters I can so often point out: Well, that is how it is anthroposophically, and that is the American caricature of it [sketch]. That is the caricature of it.

But if someone is a fanatic and has come to Anthroposophy not through the inner life but through fanaticism, then he finds the very sharpest invectives for Americanism because — well, man abuses the apes chiefly — since the ape is like himself — as a caricature. And so it is really such a remarkable affair as between North and South Pole, between what we achieve spiritually in Europe and what is gained over there in America in a natural way.

Books on natural science in America do not look at all as they do in Europe. They really talk continually of Spirit, but they represent it to themselves in the crudest, most material way. Hence Spiritism has also arisen in America in recent times. For what does Spiritism do? It wants to talk of the Spirit and imagines it as cloud-phenomena, would prefer everything to be like cloud-phenomena. And so Spiritism is an American product, it aims at the Spirit but in a materialistic way.

It is in fact so interesting that in America materialism simply flourishes, but actually on the way to the Spirit; while in Europe if someone becomes a materialist he dies as human being. The American is a young materialist. In fact, all children are at first materialistic, and then grow to what is not materialism. So too will the American blatant materialism sprout to a spiritual element. That will be when the sun rises in the Sign of Aquarius.

Now, you see, in this way we can realize what we as Europeans have as a task. Our task as Europeans is not at all always to abuse the Americans, but naturally we must found over the whole earth a civilization which is put together from the best.

If one thinks about things as the Prince of Baden does who has been taken in by the American European Wilson, then it does not do. For Wilson was not a true American. He had actually taken all his theories from Europe and therefore made things so dreadfully theoretic. But genuine Americanism will one day unite with Europeanism which will have taken a more spiritual path. When one studies something in this way one sees the attitude one should take in the world.

And so it is really quite interesting: On the one hand we have the black race, which is most of all earthly. When they go westwards, they die out. We have the yellow race, which is between earth and cosmos. When they go to the East they become brown, connect too much with the cosmos, die out. The while race is the future one, is the race creating in the Spirit. When they moved over to India they developed the inward, poetical and spiritual Indian culture. When they now go to the West they will develop a spirituality which does not so much grasp man's inner being, but turns to the spirituality of the outer world.

And so in the future, purely out of the racial characterization those things will emerge which one must know in life so that one takes the right stand. Men are getting less and less adjustment in life. They want indeed to have everything fall from the skies and not actually to learn.

This has come about through the fact that in the last third of the 19th century nothing more of a human element was provided in education, particularly in scientific education. Knowledge of man is so difficult to present nowadays. Materialistic scholars themselves realize this, they get no farther.

It was very interesting at the last Natural Science Conference. One of these scientists had especially realized it

— one does not advance, one learns nothing of the human being through science today. — But he did not go on to say: “We must develop towards Anthroposophy:” he said: “Give us corpses so that we may dismember them.”

You see, that was all he could say: Give us corpses! People want to have more corpses, they want to study the dead man. That was a right catchword: Give us corpses! — Whereas we here can do without corpses, for we want to observe and study the *livin*g man. For that it is only necessary to open one’s eyes and through one’s eyes somewhat the soul, for one finds the living man everywhere. One meets nothing but living men. Only one must be able to live with them, so that they may make known to one what a human being is.

But the learned scholars of today have really quite weak eyes; they do not see man. And then they fervently beg “Give us corpses!” Then they can study them. Give us corpses! This was the position in educational centers in recent years, recent decades. People have taken in nothing there pertaining to man. And so knowledge of man has disappeared from all science.

That is why I dealt with this question in the first chapter of my “Threefold Commonwealth.” I had to show how those who had not been occupied with science but with work had advanced and now naturally wanted science. But the others, the bourgeois, could not give them this, which they appeared to have. And thus arose the great calamity in civilization. The workers demanded science and it was not there, because only a science was there that is devoid of man.

I have shown that in the first chapter of the “Threefold Commonwealth” because that must first be understood if one talks of the social question. So that it was in fact necessary for the “Threefold Commonwealth” to begin with it in the first chapter.

Now, we have dealt with colors somewhat further today.

3. The Life of the Earth in the Past and the Future

(Questions were asked about Colours and Primeval Rock.)

DR. STEINER: I will first deal with the question about rock, as that can very well be brought into connection with the things we have been considering lately.

Now you know that when a building is put up on the earth, great attention has to be paid to the laws of weight, gravity and many others — the laws of elasticity, for instance, of which we shall speak presently.

Imagine that one builds a tower, a tower, let us say, like the one on Cologne Cathedral, or that one builds something like the Eiffel Tower. It is clear, of course, that it must be built in such a way that it does not fall. If one has accurate knowledge of the laws of gravity there is no need for the whole thing to fall down. Still, the highest towers on earth can only be built on a base, and if you carry upwards to a height about ten times the base — that is, one to ten, you can get the highest towers.

So with the ratio of one to ten the highest towers can be built — otherwise the motion of the earth, wind storms, etc., would make them fall.

But in addition one must take care that the towers are in themselves somewhat elastic. The top always rocks to and fro slightly. Attention must be paid to what is called the force of gravity. The tower will always rock, but as soon as it rocks too violently it collapses. The Eiffel Tower rocks quite considerably at the summit. But care must be taken that it does not get thrown out of its base.

Now if you look at — let us say — a blade of wheat, you find at once that these laws are not observed at all. A blade of wheat is really nothing but a tower, yet it has a tiny base. A wheat blade with its tiny base goes up high aloft, and if we reckon out the ratio it is certainly not one to ten, which must always be used in mechanical building. The ratio is much more like one to four hundred, and in many cases one to five hundred.

By the mechanistic laws we use on earth, such a tower would quite definitely have to fall down. For when it is shaken by the wind its elasticity forces cannot be understood at all by the laws that a mechanist must obey.

If you tried to set up something else quite heavy on the Eiffel Tower, you would find that it simply could not be done! But at the top of *this* tower, this blade or stalk, there is still the ear, and it moves to and fro in the wind. That, you see, contradicts all the laws of the builders.

Now when one investigates the substances of which this blade consists, one first finds wood, that is to say, one gets a woody substance which you all know as bast. You see it in trees. And next you find in it a real building material: silica, quartz, real silicic acid. But it is harder quartz than is found in the Alps, in granite, for instance, or gneiss. This quartz, then, forms a scaffolding.

Besides these it contains a fourth substance — water. Thus this mortar made from wood, bast, water and quartz enables the stalk to contradict all terrestrial laws. A blade of grass is also a tower built entirely of substances. It can be tossed in the wind, does not break, rights itself when the wind ceases or the weather is favourable and calmly stands upright again, as of course you know.

But forces such as these, forces which can build something like this out from the ground, are not to be found on earth, assuredly not. And if you ask: Well, where do they come from? — this answer must be given: The Eiffel Tower is dead, the blade of wheat is *alive*. But it does not get life from the earth, its life comes from the whole surrounding universe. [See *Fundamentals of Therapy*, by Rudolf Steiner and Dr. Ita Wegman. Chapter III, “The Phenomena of Life.”] On the Eiffel Tower, gravity works purely downwards, drawing it down. The blade, however, does not grow by supporting itself on what is below. If we build the Eiffel Tower we must lay one material upon another and what is beneath will always be the support of what is above. With the blade this is not the case; the blade is in fact drawn out towards universal space.

So if you picture the earth (*a sketch was made on the blackboard*) and there the blades of wheat, then because the universe is filled by a very fine substance called *ether* which lives in the plant, [See *Etheric Formative Forces in Cosmos, Earth and Man*, by Dr. G. Wachsmuth.] the wheat blades are all drawn out towards the universe. But life does not come from the earth, it comes from cosmic spaces, and we can say: life simply comes out of the universe.

In the same way, when the egg is formed in the body of the mother (I have spoken of this before) this body only provides the substance. It is the whole cosmos that works upon the egg and gives it life. In all that lives, you see, the whole of universal space is working.

Now if you consider the plant, it grows, to begin with, under the earth. (*A sketch is made*.) If that is the earth, the plant is growing within it. But the earth is not some sort of neutral lump, it is really miraculous. It contains all sorts of substances, but three were of quite special importance in ancient times.

One of the three is a substance which we call *mica*. Only a small amount is to be found in plants to-day, but even so it is extraordinarily important. If you have already seen mica, you can perhaps remember that it is formed of thin plates, so thin that they sometimes look transparent. And once upon a time the earth was interwoven by such little mica plates. They went in *this* direction (*sketch*). As long as the earth was soft, such forces were still in it. Opposing them were other forces: they went so (*sketch*) and thus there was a real grating of lattice-work in the earth. These other forces are to-day contained in *quartz*.

And in between is yet another substance — clay. This clay unites the two, it fills in the lattice-work, so to speak. As a rock it is called *feldspar*.

Thus at one time the earth was composed in the main of these three kinds of primeval rock. But it was all soft, like pulp. There was the mica, which was really at pains to have the earth formed of thin plates in a horizontal direction. Then there was the quartz, radiating in this direction, and then the feldspar cementing the two together.

We find these most essential constituents to-day when we take the clay soil that is everywhere in the fields. At one time they were all intermingled inside the earth, now they are to be found outside in the mountains. If we take a piece of granite, it is quite granular, simply composed of little scales. These scales are the thin places of mica broken into splinters. Then there are very hard grains in it — that is the quartz; and then combining grains — the feldspar. These three bodies are broken down, made granular and are to be found outside in the mountains. They form the base of the hardest mountain ranges.

Thus since the earth was soft they have been pounded and broken to bits by all manner of forces which work in the earth. But remains of these old substances, particularly remains of their *forces*, are still to be found everywhere in the earth and the plants are built up from them by the universe.

We can say therefore that when they are working to-day out there in the mountains, they can create nothing more. These rocks are broken up, crumbled away, crushed into grains and are too hard to become plant. But since the plant always gives its essential substances and forces to the seed, what is within the earth can still be used for building up the plant out of the universe.

Such a view as this, where one takes into account how the whole of cosmic space works together to produce life, is not found at all in modern science. You may have read of the lecture recently delivered in Basle where an explanation was given of how life must actually have arisen on earth. The lecturer said: Yes, it is difficult to imagine that through mere intermixing or chemical combinations of substances, life comes about on earth. Then it must have come out of the universe — but how?

Now it is interesting to see how a modern scientist pictures to himself the way in which life can have come out of the universe. He says to himself: Well now, if it is not on the earth it must have come from other stars. The nearest star which perhaps once threw off substances that then flew towards the earth is so far away that what was split off would take forty thousand years to reach the earth. One has to imagine that the earth was once a fiery-fluid body. There could be no life on it or else of course it would have been burnt up. But it cooled down and then it was able to absorb life if it had flown to it from the nearest star. Now one cannot imagine — said the lecturer — that a life germ, a little germ of life wandered for forty thousand years through cosmic space, especially as this has a coldness — not warmth — of minus 220 deg. C. This germ then would arrive at the earth and then life on earth would originate. Earlier, no matter how many germs had flown into it, they would have been burnt up. And when the earth had sufficiently cooled down they would have thriven. But this simply could not have come about, said the lecturer. Therefore we don’t know where life comes from!

But one can see quite clearly that life comes out of the universe. One sees in reality that in everything living, not only earth-forces are at work. We use only the forces of the earth for the Eiffel Tower and so on. But in such a tower as this (blade of wheat) there work indeed not only the earth's forces but the forces of the whole universe. And when the earth was still soft, when mica, feldspar and quartz or silica, swam through each other in the fluid condition, then the whole earth was under cosmic influences; it was a giant plant. When you go out to the mountains to-day and find granite there, or gneiss — which differs from granite in being more rich in mica — they are the remains of this ancient giant plant. And just as when to-day the plant decays and gives over its mineral constituents to the earth, so, later on, the whole earth body as plant gave over its mineral constituents. And thus to-day you have the mountain ranges. For our hardest mountains originated from the plant nature, when the whole earth was a kind of plant.

I have already told you how the earth looked when this primeval rock had ceased to be in a plant condition, but all was still soft. Our present animals and men were not then in existence, but the Megatherion and all the creatures I described to you. But before all this came about, the earth was a giant plant in cosmic space. And if you observe a plant to-day and enlarge it, you find even now that it resembles the mountain formations outside. For the universe only acts on the plant as a whole; its minutest parts are already stone. Thus, briefly, the earth has once been alive and what we find to-day in the hardest mountain rocks is the remains of a *living* earth.

But the earth’s solid, mineral matter has originated in yet another way. If you go out on the ocean you find island formations. Here is the sea (*sketch*) and at a certain depth under the sea there live tiny creatures in real colonies — the coral-insects or polyps. These coral polyps have the characteristic of continuously secreting chalk. The chalk remains there and the island is finally covered by their deposited chalk secretions. And then sometimes the ground sinks in *here*, is submerged and a lake is formed. There is a ring of chalk which the coral insects have left behind. Now the earth as a whole is continually sinking in the very regions where these polyps are depositing their chalk. They can only live in the sea itself, so they go down deeper and deeper, while the chalk is left behind up above.

Thus one can still find in the sea chalk deposits which are derived from living creatures, namely, the coral polyps. Formerly there was animal life where now in the Juras we find limestone or chalk. The limestone is the deposit of former animal life.

If you go into the central Alpine region where the hardest rocks are, there you have the deposited plants. If you go into the Juras, there you have what is deposited by animals. The whole earth has once been living; originally it was a plant, then an animal. What we have to-day as rock is the remains of *life*.

It is simply nonsense to imagine that life is built up from dead substances through chemical combination. Life comes out of the ether-filled universe. It is nonsense to say that dead substances could unite and come to life — what is called “original creation.” No, it is precisely the dead substances that are derived from the living, are deposited by the living. As our bones are separated out — in the mother’s body they are not there at first — so is everything, our bony structure, etc., formed out of the living. The living exists first and only afterwards comes the dead. The ether surrounds us and it draws everything upwards just as the earth’s gravity draws everything down. It draws upwards but it does not bring death, as gravity does. The more you inhale gravity, the more you become gouty or diabetic or something of the sort. To that extent we become dead. And the more the upward forces prevail in us, the more living we become.

HEALING FORCES IN HUMAN NATURE

I now come to a part of the question which Herr B. has asked. Let us imagine then that I have someone before me who is ill, and I can say to myself: What is wrong with him is that he has not enough of the forces that work outside in the universe. He has too much of the forces of gravity — everything imaginable is deposited in him. Now I remember! Yes, I say to myself, it was quartz, silica, that at one time let forces stream out into the universe. If I prepare silica in such a way that the original forces become active again, that is, if I make a preparation from silica, mix it with other substances by which the silica element gets etheric force again and give this as a remedy, then I may be able to make a cure. Very good results can come from a silica preparation. And so in medicine one can make use again of forces which at one time existed in silica in living form. Great achievements in medicine can be secured if one reflects upon the condition of the earth when it was fully alive, when the silica was still under the influence of the universe.

Therefore when too little is *living* in a patient and he needs a connection with the universe, i.e. gives him substances which lie hardened outside and which one can very well employ as medicaments.

The head projects most of all into the cosmos, therefore it is most easily healed with silica; the abdomen tends most towards the earth, hence it is most easily healed with mica. And that which lies more in the centre — lungs, etc. — that one heals very well with feldspar when one prepares it in the right way.

So now you see that when one understands nature, one also really understands what are healing forces in human nature. But one must have a real feeling for the fact that the universe acts upon our earth.

Now it is always only possible to explain certain things at certain times. And so I can explain to you the flight of birds from another aspect than the one I took before, when we were not so advanced. Our modern science thinks very abstractly about the flight of birds in autumn and spring. In spring the birds leave their warmer haunts and in autumn, when it gets colder, they desert the more northerly regions. But there are birds which fly over the ocean in a south-easterly direction and they fly very fast and make no halt in between. One can prove this because it can be shown that there are no islands at all on the routes such birds sometimes take. Moreover they fly very high and it is not possible, on the lines of ordinary science, to answer the question: what do they breathe up there! For one could only think that so high up they would be stifled.

Nor can people make out how these birds find their direction. It is sometimes said: Oh, well, that is an inherited faculty; the young ones have always inherited it from the older ones, and the old birds instruct the young and then it works very well — the young ones can also do it. So when autumn comes, the older swallows organise a school, the young ones are instructed, the old ones fly in front, the young ones behind and copy them. This is what people have imagined.

But not all birds of passage do this. In the case of migratory birds in South Africa, for instance, when spring comes here with us, the older birds fly away first and come back here. The young ones can hold out longer there because they are still strong. The old birds get away earlier from the dust and leave the young ones behind. They don't instruct them at all, don't act as guides; the young have to find their way quite alone.

Some people have said: Oh, well, birds see to a great distance. In fact if it is a case of Africa they would even have to see through the earth! One doesn't get very far with these things. But I will give you an example by which you can see how the matter really lies. There is something else about which one can wonder how it makes its way — namely, a ship. How does a ship find its direction if it is to sail from Europe to America? It takes its direction from the compass. When as yet there were no compasses it went rather badly with the ships; they had to find their direction from the stars. So they steer their course by the compass, that is to say, by forces which are invisible, which are present in the ether. These are the very forces by which the birds find their direction! Only we men have no longer a sense for these invisible forces. The birds, however, have a sense for them, they have an inner compass. What we only learn laboriously, by observing the etheric forces with compass, magnet, etc., a bird has within itself. It flies by the ether, by what is working in universal space.

And so we can say: the earth is everywhere surrounded by ether and the ether contains *life-forces*. They come from the universe, take hold of earthly substances and from them bring about the living.

But something always remains within as *remains of life*. When, for instance, you take coral chalk, there is always something left that a little recalls life, something that has branched off from the living. So it is possible to find all sorts of things within it still, which can be administered as quite a good remedy.

And if, as I said, you take silica, which has already become terribly hard, and make use of it as a medicament, you can heal head ailments very effectively.

Thus life is still within it. The whole of it has once been alive. We cannot say that minerals are still living to-day, but they have lived once. They were once constituents of life. There is a remnant left in them which we can extract by all sorts of means and through which they can serve very well as remedies.

So this question as to *whether there is also life in stone* has been answered. If people only calculate with the forces acting on earth, then they proclaim that the earth looked different millions of years ago. They take no account in this of heavenly space. I said to you lately that if one takes into account what comes from the heavens one does not arrive at anything like such vast numbers of years.

One discovers, however, that here in our regions everything was still frozen and covered with ice, while over in Asia there was already quite a high degree of civilisation with much wisdom spread among the inhabitants.

But one comes to see that in a certain way our earthly life depends on the life outside, the life in the universe. When one goes back six, seven, eight thousand years, the earth with its mineral rocks was quite different from what it is to-day; not so much externally, but internally quite different. And then one goes back farther and farther to the soft condition of the earth. If we want to direct ourselves by the cosmos, we must observe it in the right way.

Now one can observe the cosmos by observing the position of the sun's rising. At the present day the sun in spring rises on the morning of 21st March with the constellation of Pisces behind it. But if one goes farther back — for instance, into the times before the Birth of Christ, the sun rose, not in Pisces, but in the constellation of Aries. That means the vernal point has moved along. If the sun rises in spring on 21st March in Pisces, then about 2,160 years ago it rose in Aries, still earlier in Taurus, still earlier in Gemini. There are twelve such constellations.

Thus the rising position of the sun is always moving in a backward direction; it moves round a whole circle, so that the vernal point goes quite round the earth. Is that understandable? It is always moving farther round from west to east.

One therefore arrives at the fact that formerly the sun rose in Aries, earlier in Taurus, still earlier in Gemini, then in Cancer, Leo, Virgo, then in Libra, in Scorpio, Sagittarius, Capricorn, Aquarius and then, as to-day, in Pisces. So when we go back 2,160 years it rose in Aries, another 2,160 years in Taurus, another 2,160 in Gemini, still another in Cancer, another in Leo. Then we come round again until at one time it was rising in Pisces. We come right round. (*Sketch*.) In 25,920 years the sun makes a revolution round the whole universe.

That is very interesting, and by such a course of the stars one can see how everything on earth changes. With the conditions brought by our present vernal point, we have our high mountains with the dead *granite masses*, containing feldspar, quartz and mica. It is all dried up, devastated. So it was, too, 25,920 years ago: similar conditions then prevailed on earth. But in between it was all different. For instance, the sun rose at one time in spring in Libra, between Virgo and Scorpio. Then the whole earth was alive, soft, was in fact a kind of plant. We need not go back more than 15,000 years at most, then through the quite different position of the sun the earth had a plant nature, and later an animal nature. We should be able to follow from the sun’s course how the influences coming in from cosmic space have altered conditions on the earth.

You must think to yourselves, as you go back in time: the rock in the primeval Alps which is quite hard and solid to-day begins to flow, somewhat as iron flows in an iron foundry. It is naturally not quite the same, for when we go back the flow is reversed, as it were, it is in process of becoming solid. And if we go forward into the future, we shall again have the sun in Libra — for now it rises in Pisces, after 2,160 years in Aquarius, then in Capricorn, Sagittarius and once more in Libra, the Scales. At this future time when the sun rises once more in the Scales, the whole primeval Alpine range will have dissolved. The dense quartzes will have become fluid again, the earth will once more be plant-like and men and animals return to the condition in which they formerly were. In the meanwhile, however, they have absorbed all that they could take in on the earth.

So everything really goes in a circle. We look back to an earlier time when the earth and its hardest formations were fluid. Then the cosmos above brought forth such creatures as I once described to you; they arose through the in-working of heavenly forces and died out. Then all cooled down, solid formations arose and gradually there came the life of to-day.

But it all goes back again. The granular quartz and granite, etc., are dissolved and former conditions return, but at a higher stage of evolution.

If you take in your hand a piece of granite containing quartz, you can say: This piece of granite with its quartz will at a future time be alive again. It has lived in former ages and to-day it is dead. It has formed solid ground upon which we can walk about. When we did not need to walk, the solid ground was not there. But one day it will come to life again.

In fact we can say that the earth sleeps as regards cosmic space — only the sleep is long, 15,000 years at least. When the earth was alive it was awake, it was in connection with the whole universe and the life forces of the universe brought forth upon it the great beasts. Later, as solidity was reached, these forces brought forth the human beings. Human beings nowadays have a pleasant time of it on earth — of course in regard to the universe too — they can go about on solid ground. But this solid ground will wake up again — it is really only asleep — it will wake up again and become active life.

If we take a piece of chalk, limestone, just an ordinary bit from the Juras, it is the remains of a portion of life. It is deposited from life, but someday it will be alive again, it is between life and life and is really only asleep.

Now we can use chalk, or calcium, very well as a medical preparation when, for instance, we find that children cannot absorb proper nourishment. This is particularly the case in Germany to-day — it is dreadful there now. When I recently went to Stuttgart to inspect the Waldorf School again, I visited the first Class. We have twenty-eight children in this Class, of whom only nineteen were present, the others were all ill. In another Class, fifteen were ill. And when one goes into it one finds terrible conditions. They brought a little boy into my consulting room and asked: What is to be done with him? He can no longer eat and the doctor has given him up.

Through persistent undernourishment, the digestive organs gradually form the habit of not being able to digest and they refuse everything. People can no longer eat, no matter how much one gives them. You can give them Quaker meals (The Society of Friends supplied the Waldorf School with food gifts) and everything possible, but nothing can help the child because his organs have ceased to act. He looks rather fat and greyish-yellow. What is to be done? The organs must first be made fit again to take in nourishment. Here one is well served by the little bit of life that is in calcium. When calcium is rightly used as a remedy, one can reawaken these sleeping digestive forces so that the child can live. One must give a mixture of calcium with other substances as it does not work by itself alone; it must be made to pass over into the organism. The calcium is absorbed if it is given in 5 per cent dilution.

But what is one using in giving calcium in this dilution? One is using the forces which once, in earlier times, were life forces in the chalk. They are still in it and can be used to reawaken life. But if one uses calcium in high dilution, in homeopathic doses, as one says, not 5 per cent but 5/10,000 — not even 5 per 1,000 but 5/10,000 — this, mixed with the other substances, acts on the head. It immediately becomes a remedy for the head.

If one gives the calcium allopathically it acts on the digestive organs, but in a quite high dilution it acts on the head and one can vary one’s treatment in this way. It is also possible to ask: what is one using in the high dilutions of calcium? Here one is using the forces *of the future* which are still in it and will come into existence again in future ages.

You see, we must know nature in this way and then it can give us remedies. For there was once life everywhere and will be so again; death only stands between two lives. From primeval rock it is possible to use both past and future life forces in the right way.

This makes us realise something else. We find in our modern world both allopaths and homeopaths. The allopaths cure allopathically and the homeopaths, homeopathically. Well, but as a matter of fact many illnesses cannot be cured homeopathically, many must be cured allopathically.

Remedies must be prepared differently. One cannot be a fanatic who swears by words, one must administer the remedies out of a full knowledge — sometimes so, sometimes so. Anthroposophy does not go in for catchwords — allopathic — homeopathic — but it studies the matter and says: the allopath works principally on the stomach, intestines, kidneys; there he is successful. Homeopathy is successful when the source of the illness is in the head, as in influenza. Many illnesses have their origin in the head. One must know how things really take their course in nature. People invent catchwords to-day as they no longer have real knowledge. Catchwords are always invented when things have ceased to be understood.

It is naturally not easy to arrive at the truth, for the allopath says: I have often cured such and such … and the homeopath says: I have often cured such and such. … Of course they always leave out the diseases they have not cured!

But take a man like Professor Virchow of Berlin, a doctor and professor who certainly could not be accused of not standing completely in modern medicine, who has even been called a genuine Liberal by the Free Thought Party. Yet with regard to cures he has been obliged to admit the following: “When a doctor in our modern medical world can show that he has cured one hundred people, the truth really is that fifty of these would have got well without him, and 20 per cent would have recovered even if he had used quite different remedies. So 70 per cent of cures are not to be attributed to modern medicine — 30 per cent at most.” This is what Virchow calculated and he stood fully within the world of modern medicine.

It can definitely be stated that the right remedy, rightly employed, is effective; everyone can convince himself of that. Quicksilver, for instance, although it has after-effects, is nevertheless efficacious. And so one must just find the right thing. Sometimes it is terribly complicated, sometimes the organism has even become too brittle to stand the cure. But in a certain sense, through a real knowledge of what exists in nature, we can see how the various substances work. As dead substances they are really only in the middle between two periods of life and we can see their effect on man. But it is essential to have a real knowledge concerning their life.

Now the peculiar thing is that if one wants to understand anything, one must always start from *life*. Even in regard to colours we must take our start from life.

Sometimes when one sees modern pictures one has the feeling that there is no flesh behind, but that wood has simply been smeared with colour. Modern painters are quite unable to reproduce the tint of flesh-colour, because they have no living feeling that flesh colour is created out of the *human* *being*. Nowhere does it appear on any other material. One has to understand flesh colour and then the other colours can be understood. I will speak more about this on another occasion.

The child that they brought to me in the Waldorf School and who had been treated with calcium by the school doctor had completely lost the flesh colour and had become yellow from within outwards … let us hope that people don't say that a proper remedy was not used! Living activity is inherent in colour and we are therefore experimenting in using the less dead for colours. So when we painted the Goetheanum we used *plant colours* as they come more from the living. In colour too you must go to life.

You see, the question as to whether rocks also have life was not so foolish, in fact it is quite intelligent. It has given us the opportunity of considering how the rocks are alive in the course of the earth's evolution, become dead again, and so on, and how human life is related to this.